

Notice of Allowability

Application No.

10/672,193

Examiner

Fernando L. Toledo

Applicant(s)

LUO, PING

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 26 September 2003.
2. ☒ The allowed claim(s) is/are 1-16.
3. ☒ The drawings filed on 26 September 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☒ All b) ☐ Some* c) ☐ None of the:

1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Nelson Quintero on 26 May 2004.

The application has been amended as follows:

In the claims:

1. (Amended) A method of forming a TFT device, comprising the steps of:

providing a substrate;

performing a first patterning procedure with a first photomask to form a first semiconductor island and a second semiconductor island on part of the substrate;

performing a second patterning procedure with a second photomask to expose the first semiconductor island and/or the second semiconductor island;

doping impurities into the exposed first semiconductor island and/or the exposed second semiconductor island to adjust threshold voltage;

forming an insulating layer on the first semiconductor island, the second semiconductor island and the substrate;

forming a conductive layer on the insulating layer;

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performing a third patterning procedure with a third photomask to remove part of the conductive layer and define a first gate and a second gate;

using the first gate and the second gate as a mask, performing an n^- -ion doping procedure to form an LDD region in the first semiconductor island;

performing a fourth patterning procedure with a fourth photomask to expose the second gate;

using the second gate as a mask, performing a p^+ -ion doping procedure to form a second source/drain region in the second semiconductor island;

forming a passivation layer on the insulating layer, the first gate, and the second gate;

performing a fifth patterning procedure with a fifth photomask to form a plurality of contact holes penetrating the passivation layer and the insulating layer to expose portions of the first and second semiconductor islands; and

by means of the contact holes, performing an n^+ -ion doping procedure to form a first source/drain region in the first semiconductor island;

wherein an ion dosage of the p^+ -ion doping procedure is greater than an ion dosage of the n^+ -ion doping procedure.

Allowable Subject Matter

2. Claims 1 – 16 are allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance: Zhang et al., in the U. S. patent 6,635,521 B2 substantially discloses the claimed invention. However, Zhang does not disclose, teach or suggests "performing a fifth patterning procedure with a fifth photomask to

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form a plurality of contact holes penetrating the passivation layer and the insulating layer to expose portions of the first and second semiconductor islands” and “by means of the contact holes, performing an n^+ -ion doping procedure to form a first source/drain region in the first semiconductor island; wherein an ion dosage of the p^+ -ion doping procedure is greater than an ion dosage of the n^+ -ion doping procedure.” Zhang forms the source/drain in the first semiconductor island prior to forming the passivation layer.

Matsumoto, in the U. S. patent 6,372,562 B1 discloses forming a passivation layer, forming contact holes on the passivation layer and ion implanting through the contact holes, however this is done to form a diffusion layer in the substrate.

There is no motivation, aside from improper hindsight, to combine the inventions of Zhang and Matsumoto to form the claimed invention. Therefore the claimed invention as a whole is neither anticipated nor rendered obvious over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Conclusion

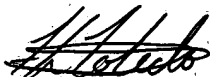
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fernando L. Toledo whose telephone number is 571-272-1867.

The examiner can normally be reached on Mon-Thu 7am to 5:30pm.

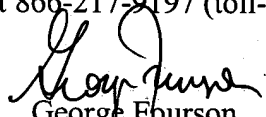
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



FToledo
26 May 2004



George Fourson
Primary Examiner
Art Unit 2823